

dehydrogenation of aromatic or six-membered rings. Another large fraction includes a study of the catalytic hydrogenation of systems containing conjugated double bonds and systems in which the preferential hydrogenation of triple bonds with respect to the hydrogenation of other groups is of interest. Keier gives an excellent discussion of the adsorption centers on nickel catalysts for the hydrogenation of acetylene. Eidus contributes one of the few discussions that has been published on the mechanism of isosynthesis.

Only two of the ten papers on cracking cover what one might call basic work. Most of them give only factual accounts of catalytic cracking over silica-alumina, clay, or aluminum chloride catalysts.

Volume 6, *Isomerization, Alkylation, Dehydration*. The 20 papers on isomerization are about equally divided among factual papers and those which include both data and a discussion of possible mechanisms and theories. Reactants include the terpenes, paraffins, olefins, and five- and six-membered rings. Catalysts studied include silica gel, clays, chromia-alumina catalysts, AlCl_3 , and titanate. One interesting reaction was the isomerization of 1,2-hexadiene into mono- and di-substituted acetylenes.

The alkylation reactions were concerned mostly with the alkylation of various aromatic compounds with olefins and alcohols. Several papers discuss the adding of alkyl groups to ammonia and other nitrogen-containing compounds. Magnesium oxide was especially active for these latter reactions. The other alkylation catalysts were rather standard ones; they included silica-alumina catalysts, phosphoric acid, BF_3 compounds, AlCl_3 , and $\text{HSO}_4\text{-AlCl}_2$.

About one-half of the 11 papers on catalytic dehydration were by Y. A. Gorin and his colleagues and were concerned with the study of the Lebedev catalyst for converting alcohols into dienes having twice as many carbon atoms as the alcohols. Other dehydrations of alcohols and of formic acid were studied over typical catalysts, including silica gel, clay, alumina, and sulfuric acid. Several dehydrations in which gaseous H_2S and ammonia molecules help to effect dehydration were studied.

Volume 7, *Polymerization, Friedel-Crafts, Ziegler*. This is the shortest of all the volumes and contains three papers on polymerization, 16 on Friedel-Crafts reactions, and four that are classed under the title "Ziegler." The condensation of styrene oxide and ammonia over aluminum oxide, the dimerization of isobutene over quartz at low pressure, and the polymerization of oleic acid over BF_3 and phosphoric acid are the topics covered in the polymerization section. The Friedel-Crafts papers include four or five which

deal exclusively with the mechanism of the action of aluminum chloride in such reactions. Other catalysts that are discussed include zinc chloride, antimony chloride, and ferric chloride. The four papers that are classed as "Ziegler" do not, in fact, contain any reference to the work of Ziegler. Two of them refer to the preparation of trichloroalkoxytitanes and trialkoxytitanium chloride. The other two are concerned, respectively, with the polymerization of styrene over ferric chloride and stannic chloride catalysts and the formation of various organoantimony compounds.

In conclusion, a few remarks should be made in regard to some of the important aspects of catalysis that are not included in this series. In no sense does this collection represent a treatise on the general subject of catalysis. Vast areas are completely omitted. For example, no mention is made of the catalytic synthesis of ammonia, the synthesis of methanol, the catalytic oxidation of ammonia, or the synthesis of higher alcohols. Furthermore, one of the most basic topics in the theory of catalysis, the influence of the electronic structure of solids on the catalytic activity, is hardly mentioned, in spite of the fact that this topic has been uppermost in the catalytic literature since about 1949.

It seems evident, in view of what has been said above, that the present series will be useful chiefly for reference to specific types of work that are treated in some detail and that it is not a comprehensive survey of the basic ideas of catalysis or their general application.

The books are paper-bound and rather fragile. The printing is satisfactory, but a few of the drawings and diagrams are a little difficult to read.

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Marine Ecology. Hilary B. Moore. Wiley, New York; Chapman and Hall, London, 1958. xi + 493 pp. Illus. \$9.50.

Since the publication of James Johnstone's *Conditions of Life in the Sea* in 1908, there has been no single-volume exposition of marine ecology in English. Ecologists have nevertheless been busy these last 50 years, and a fantastically large literature has accumulated. It is a brave man who attempts to summarize this single-handedly, and Hilary Moore has in effect disarmed his critics in advance by pointing out that his book is a summary of his own specialized field in marine ecology, and by urging, in his concluding statement, other specialists to go and do likewise. Let us hope, then,

that other publishers will not consider that this book has exhausted the field.

Moore is primarily an autecologist, and this book concerns the basic environmental factors of the sea and the natural histories of individual marine organisms. The opening sections deal with physical, chemical, and biological factors. These are followed by sections on the various marine habitats (including estuaries), and then there is a similar arrangement of sections on the organisms of the various habitats. A useful innovation is the classified list of genera, keyed to the index, which makes it possible for the reader to find the major classification of some 403 generic names without seeking them out in monographs.

Moore considers that only a very few basic principles of ecology have been established, and that an attempt to apply these to the sea would be to some extent misleading. Hence he does not discuss such matters as the theory of communities or of the ecosystem but addresses himself to "the needs of the student in the field." Some may feel that discussions of sampling techniques and statistics, or at least some indication of source material on these subjects, would enhance the use of the book for field workers. Others will feel that for formal instructional purposes it will be necessary to assign further readings on ecological theory in other works. The term *climax*, for example, is introduced without discussion.

In his fields of competence—the critical natural history of marine organisms and plankton—Moore has produced a book that will be widely useful, especially to workers who are not as familiar with the literature of northern Atlantic species and conditions (which constitutes the major part of the literature summarized) as they may be with that of their own regions. It is particularly useful to have the major aspects of the fisheries literature treated, since this is, after all, one of the principal branches of marine ecology. The sections dealing with intertidal and pelagic organisms are especially rich in illustrative examples, and throughout the book there is a nice balance between discussion of the complexities of interrelationships and simplification by examples, but that on coral reefs, like all such short treatments, does not do the subject justice. Chemical factors are treated rather skimpily, but adequate summaries may be found elsewhere (as the author indicates). The chemical cycles of the sea, to which Johnstone devoted some attention in his pioneer work, are not considered in detail here—another indication, perhaps, of how much more complex marine ecology has become in the past 50 years. As it is, there is a surprising amount of information in this comparatively short book, and all workers in marine biology will find it in-

dispensable, whatever they may think of it as an *ecology* text.

There are some 26 pages of references and a 35-page index. There seems to be an unnecessarily large number of typographical errors, especially in proper names; this should be taken care of in the next printing.

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Environmental Sanitation. Joseph A. Salvato, Jr. Wiley, New York; Chapman and Hall, London, 1958. xiii + 660 pp. Illus. \$12.

This new text is the first, to my knowledge, that comprehensively treats the sanitation problems associated with the satellite communities that are flourishing in the rapid expansion of the suburbs. In his preface, the author acknowledges that many excellent texts are available which present the theory of sanitation practice appropriately for classroom and reference use. Most of these stress applications common to cities and towns with more than 5000 population. Others, under the general heading of "rural sanitation," lay stress on the individual farm household. First-hand experience with the activities and administration of sanitation services at the local-health-department level have added strength to the organization and content of this text.

An important aspect of this publication is the effort that is made to cover the everyday problems of the sanitary engineer and the sanitarian that arise in the course of their dealings with local government units. Such features include guidance on filling out forms for reporting on disease outbreaks, procedures for cement-grouting in the protection of wells, form letters on the design of private sewerage systems, check lists for inspection of food establishments, suggestions on how to serve as an expert witness during enforcement procedures, and information in a wide variety of administrative mechanisms.

A rather broad coverage of communicable diseases occupies the first chapter; this is followed by a brief presentation on steps to be taken in planning a facility. The remainder of the text is about equally distributed among seven chapters, covering water supply; sewage and waste treatment and disposal; swimming pools and bathing beaches; food; insects, rodents, and noxious weeds; housing; and environmental sanitation administration. The four appendixes present definitions of terms used in the text, excerpts from the "Public Health Service Drinking Water Standards" (1946), regulations relating to bottled

water (California), and a most helpful grouping of miscellaneous data on weights, measures, computation of power requirements, and fluid flow and cost comparisons.

Generous use of illustrations, graphs, and charts adds to the utility of the presentation. Examples of design computations provide a ready guide to the proper use of formulae and design data. The generous number of footnotes for bibliographic reference will be of aid in more intensive study of specific items.

It is surprising that there is only passing reference throughout the text to the problems of radiation protection. As with most first editions of such a text, there are also some lesser errors of omission that will require supplementation when the book is used in teaching. An example is the reference to the advantages of positive-displacement pumps without any notation of the need for pressure-relief valves to protect such systems from excessive pressures. These defects are minor, however, and the author is to be complimented for undertaking to bring together so much material that many of us had to learn by the trial-and-error method.

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The Effects of Radiation on Materials. J. J. Harwood, Henry H. Hausner, J. G. Morse, W. G. Rauch, Eds. Reinhold, New York; Chapman and Hall, London, 1958. v + 355 pp. Illus. \$10.50.

In March 1957 a colloquium on "The Effects of Radiation on Materials" was held at Johns Hopkins University, in Baltimore; sponsors were the Office of Naval Research and the Martin Company. This book is a compilation of the talks delivered at the conference, plus an extensive bibliography (nearly 800 references) concerning the effects of irradiation on solids and liquids.

It seems that the organizers of the conference have been rather successful in their aim to bring together a number of contributions which appeal to such different groups as physicists, chemists, engineers, manufacturers of structural components, and students of nuclear engineering. This does not mean that the collection is particularly homogeneous; it is obvious that bridges between the different areas of interest still have to be built.

The standard introductory article by Dienes presents the necessary theoretical background on different kinds of defects, number of displaced atoms, threshold energy, and so forth, and compares the

theory with some experimental data. J. C. Wilson discusses radiation sources and experimental techniques, with emphasis on reactor facilities. The extent to which corrosion and surface properties of metals and alloys can be affected by radiation is discussed by M. T. Simnad.

Irradiation effects in different classes of solids are surveyed in three chapters, on metals and alloys (Billington), dielectrics (Smoluchowski), and semiconductors (Fan). The last two papers show clearly that an understanding of the mechanism of radiation damage in a particular material can be obtained only as a result of extensive research on the behavior of defects in such a substance (for example, alkali halides and germanium).

These papers are followed by two contributions devoted somewhat more specifically to engineering. C. E. Weber deals with the behavior and performance of core components (for example, fuel elements), while G. R. Hennig discusses radiation effects on a variety of reactor materials, including liquid and solid moderators.

The final chapters are devoted to organic substances. The status of radiation chemistry of organic compounds is reviewed by M. Burton; radiation effects on polymers and graft copolymerization induced by radiation are discussed by A. Charlesby and by A. J. Restaino, respectively.

To sum up, this collection of papers gives a reasonable picture of our present knowledge (and ignorance) in the rapidly moving field of radiation. One might hope, however, that in the near future a single author will muster the courage to review this field from a central point of view.

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Current Concepts of Positive Mental Health. Joint Commission on Mental Illness and Health, Monograph Series, No. 1. Marie Jahoda. Basic Books, New York, 1958. xxii + 136 pp. \$2.75.

The first monograph resulting from the three years of intensive investigation and research of the ambitious Joint Commission on Mental Illness and Health is a noteworthy publication for two reasons. It contains as clear and authoritative a discussion of the nature of mental health as we are likely to get for several years. It also discloses the wide divergence in points of view of many psychiatrists and physicians, who think of mental health as absence of disease, and of a smaller